

# EUROPEAN PATENT OFFICE

## Patent Abstracts of Japan

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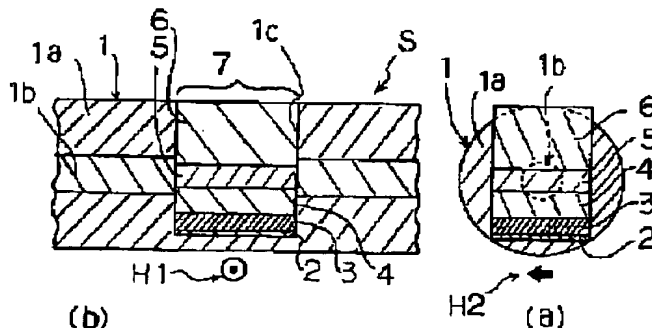
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APPLICANT : KYOCERA CORP;

INVENTOR : KOSHIBA MASANORI;

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TITLE : NONRECIPROCAL OPTICAL DEVICE  
AND ITS PRODUCTION



**ABSTRACT :** PROBLEM TO BE SOLVED: To obtain a nonreciprocal optical device which does not require a polarizer, does not require the optical axis adjustment, etc., of optical fibers with each other and has good productivity by forming grooves on the optical fibers and providing these grooves with directional coupling parts consisting of magneto-optical layers and dielectric layers.

**SOLUTION:** The optical isolator S is formed with the groove part 1c in the direction intersecting with the light propagation direction (optical axis) of the optical fiber 1. A buffer layer 2, the magneto-optical layer 3, the first electric layer 4 having the refractive index slightly smaller than the refractive index of the magneto-optical layer 3, the second electric layer 5 having the refractive index approximately equal to the refractive index of the magneto-optical layer 3 and the third electric layer 6 consisting of the same material as the material of the first electric layer 4 are successively laminated in the groove part 1c, by which the direction coupling part 7 is formed. The second electric layer 5 is so formed as to exist at the core 1b of the optical fiber 1 in the groove part 1c. DC magnetic fields H1, H2 are impressed in nearly perpendicular to the light propagation direction (optical axis) and thin film lamination direction in the groove part 1c.

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